

Virtual Town Hall

West Seattle Bridge Briefing

Seattle Department of Transportation (SDOT)

Hosted by Councilmember Lisa Herbold & Councilmember Alex
Pedersen

Guest Presenters Seattle Department of Transportation Sam Zimbabwe
& Heather Marx

Moderated by Brian Callanan, Seattle Channel

April 22, 2020



City of Seattle

Agenda

5:00 p.m.

Welcome & Overview of Tonight's Agenda

5:05 p.m. – 5:45 p.m.

West Seattle Bridge Briefing

5:45 p.m. - 6:30 p.m.

Answering Your Questions



West Seattle High-Rise Bridge Safety Project



City Council Update
Sam Zimbabwe and Heather Marx
April 20, 2020

Presentation overview

- Background and what has changed since March 23
- Future of the bridge
- Traffic Mitigation
- Communication and outreach

Bridge Background and Details

- Opened for use in 1984
- Cast-in-place concrete and steel bridge
- One-of-a-kind, uniquely designed for our topography and geography
- Designed for three lanes in either direction
- Highest daily traffic volumes among SDOT roadways
 - 84,000 vehicles (2019)
 - 17,000 transit riders



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What has changed since March 23, 2020

Background

- Bridge closed on March 23 due to rapid growth in cracking along the center section of the bridge
- The bridge was built to the standards, and using the best computation methods, of the day

Recent findings

- Recent inspections have found cracks continue to grow, but at slower rate, confirming immediate removal of live load was essential
- SDOT has a better understanding of stabilization timeline, but there is still uncertainty



Safety is top priority

- SDOT continues to inspect the bridge daily
 - Bridge is safe for crews
- We are installing intelligent monitoring equipment to alert us to any changes in the bridge in real time
- We are modeling potential cracking scenarios and preparing contingency plans
- These plans will enable rapid response to preserve public safety
- We are working with SPD, SFD, the Coast Guard and others on a safety management plan



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EMERGENCY ALERTS AND NOTIFICATIONS



SIGN UP NOW!

- AlertSeattle is the official emergency notification system used by the City of Seattle to communicate with city residents during emergencies
- Sign up at alert.seattle.gov to receive free alerts from the City via text message, email, voice message or social media

Future of the Bridge Remains Uncertain

- SDOT does not yet know if repair of the bridge is feasible technically or financially
- If repair is feasible, it could provide up to 10 years of additional use
- We do not anticipate traffic returning to the bridge in 2020 or 2021
- We are committed to clear communication and transparency throughout



Bridge went from safe to “failing” in days

- SDOT has inspected the West Seattle Bridge every year since 2013; twice as frequently as required by federal guidelines
- SDOT has publicly released inspection reports since 2013
- During SDOT’s frequent inspections of the West Seattle Bridge, there was no indication it was unsafe for ordinary use
- SDOT has conducted preventative maintenance
- No indication of impact normal use to the bridge until very recently

Over four feet of crack growth in two weeks

- **Mid-2019** – Detailed modeling of bridge structural capacity begins and epoxy repairs to cracks in center span begins
- **Late February** – engineering consultant recommends we begin planning to reduce lanes on the bridge within calendar year so repairs could be completed
- **March 19** – engineering consultant notified SDOT that new analysis of previously collected data of bridge raised larger concerns and recommend a full closure
- **March 20-23** – SDOT inspects the bridge each day
- **Monday, March 23 (Morning)** – SDOT discovers new and accelerated cracking | City leaders make critical public safety decision to close the bridge immediately
- **Monday, March 23 (Evening)** – SDOT closes bridge to traffic



Sudden expansion of cracking

Fissures grew several feet in two weeks

- On March 23, we discovered cracking had abruptly grown over the previous two weeks
- On one wall alone, we found that 8 cracks had grown more than 12 feet total
- The longest crack had suddenly increased by 4.5 feet
- Comparable rapid growth patterns were found on walls in other locations



Stabilization and shoring schedule

- Ongoing—Continue field inspection and install instrumentation hardware/real time alerts
- Immediately—Pier 18 restraint release design
- Spring—Shoring and repair design begin, technical advisory panel for peer review launched
- Summer—Pier 18 restraint released; shoring materials procurement begins
- Late Fall—Shoring construction begins
- Early Spring 2021—Shoring construction complete

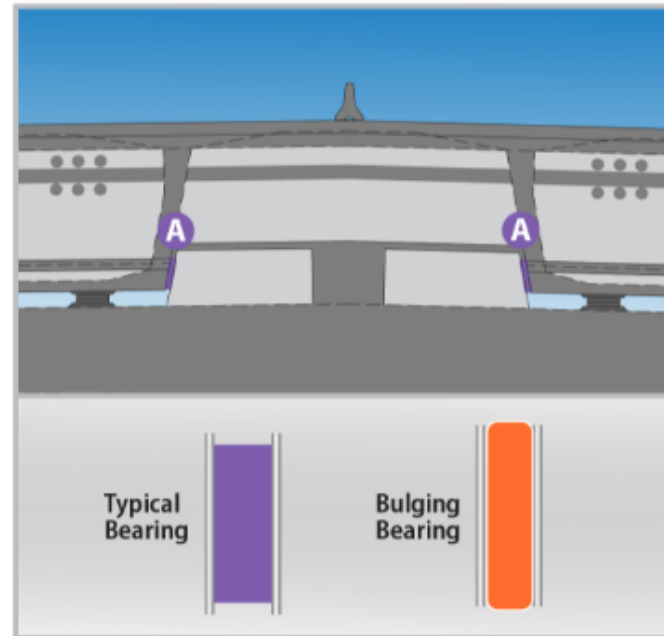
Phase I: Slow or halt bridge deterioration

- On March 23, SDOT discovered new cracking, confirming growth had rapidly increased over the prior two weeks
- Cracking has slowed since we removed live load, indicating that removing the weight of traffic has helped prevent worse damage
- Stabilization is intended to slow or stop the cracking and preserve the integrity of the bridge
- Next steps: continue to assess repair feasibility, timeline, and costs

What is a lateral bearing?

- Bridge bearings sit between the bridge's roadway and the support piers holding it up
- Bearings allow the bridge to move in response to traffic, normal concrete creep and shrinkage, thermal variations
- Pier 18 bearings are compressed and bulging, creating additional pressure and affecting the whole bridge

A Lateral bridge bearings



Lateral bridge bearings distribute pressure and allow the bridge to move in response to traffic loads, normal concrete creep and shrinkage, thermal variations, or even an earthquake.

B Pier 18 bearing

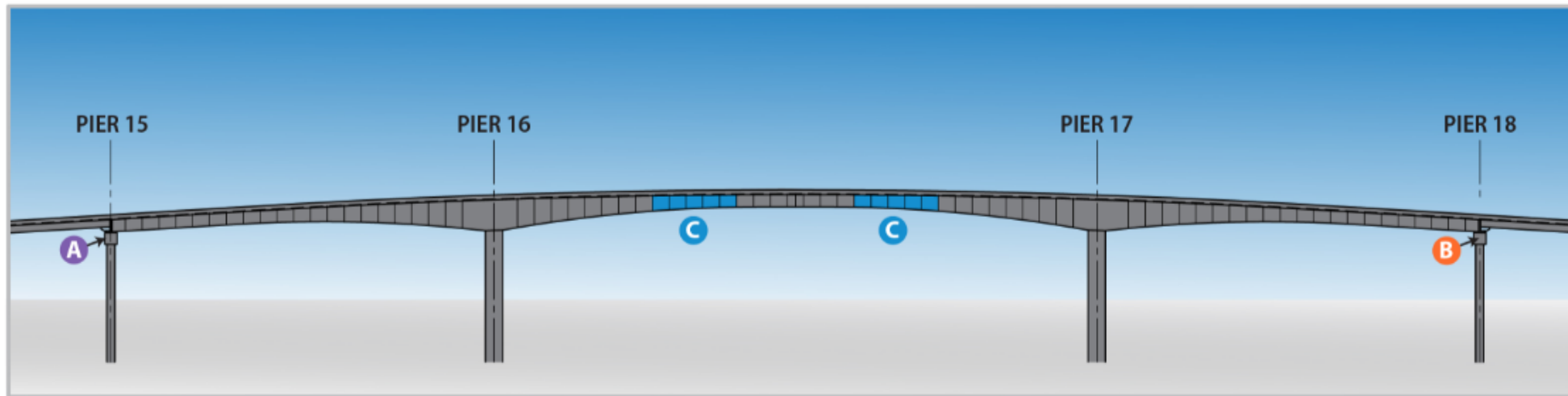


Pier 18's bearing is compressed, which means that the bridge cannot move as it should. Instead, the bearing is creating additional pressure on the surrounding area and affecting the bridge as a whole.

Stabilization through Pier 18 repairs

- To slow cracking, unlocking Pier 18 lateral bearings is the top priority for repair
- Repairing the locked bearings is contingent on bridge strength analysis to determine if the bridge can handle the stress
- SDOT is procuring a contractor to perform these immediate emergency repairs

West Seattle Bridge Pier 18 Repair



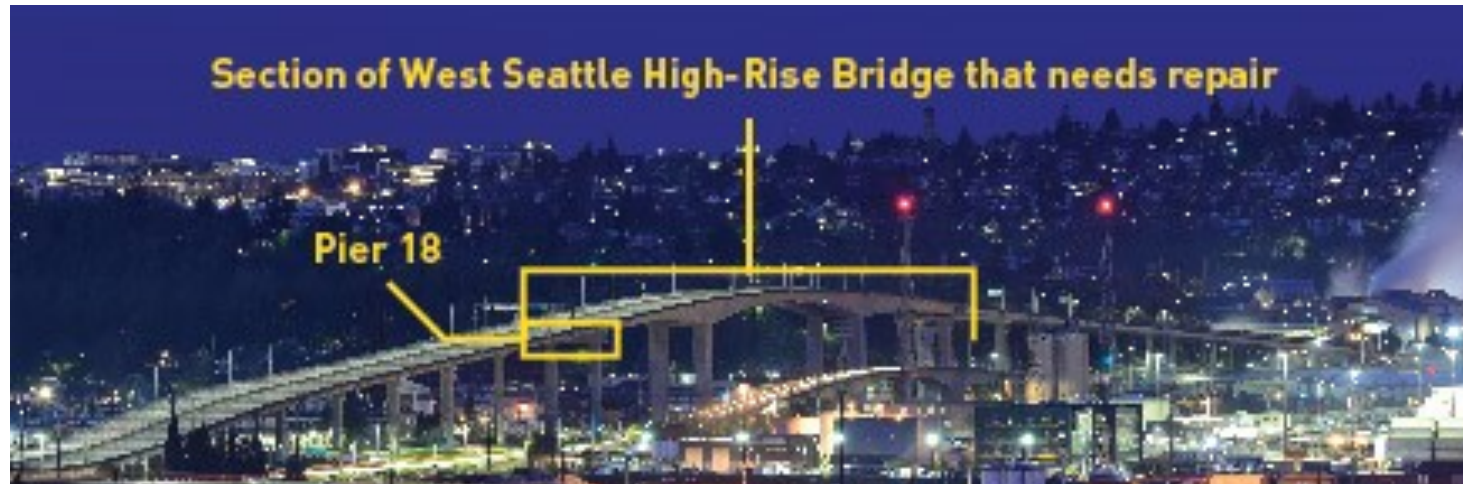
C Cracking in bridge center



Potentially dangerous **cracking** was discovered in the center of the bridge, both inside and outside the structure, leading to its closure. The Pier 18 bearing likely contributed to the cracking.

Phase II: Shoring the bridge to further stabilize

- The process of “shoring” means adding temporary support to the bridge to preserve its integrity and enable repairs
- Mid-2020 – obtain and build specially fabricated materials for shoring while Pier 18 repairs are made
- **Late 2020** – Shoring Construction



Phase III: Bridge Repair



Key elements of uncertainty right now:

- Can bridge be stabilized before further deterioration makes repair infeasible?
- Will repair require permits to impact the navigation channel?
- Will repair require special fabrication or equipment?
- Is repair feasible technically or financially?
- We are at 0 percent design, and each step will impact what's doable and timeline

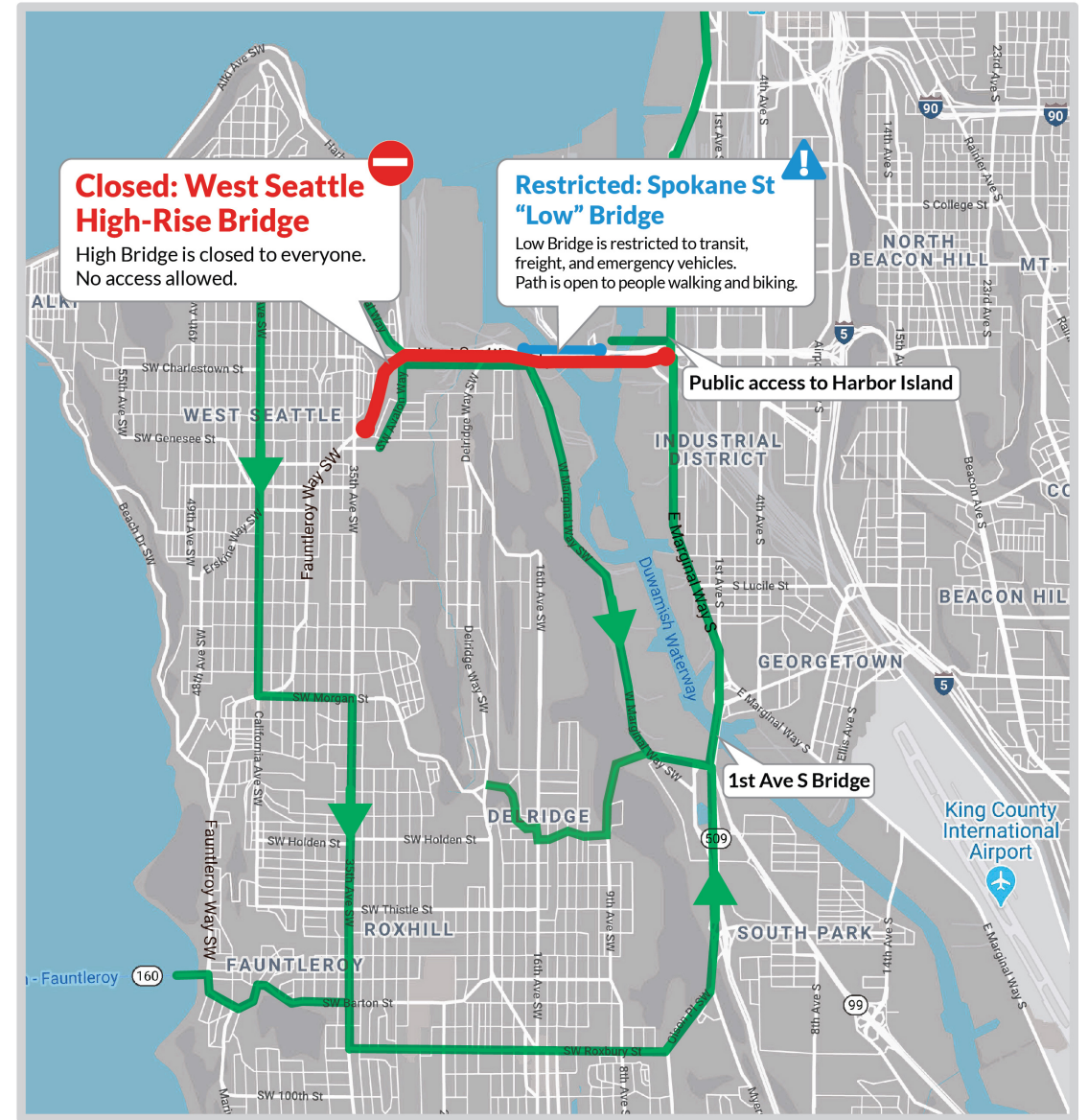
Traffic Mitigations — Low Bridge

- Closing the West Seattle Bridge has a similar level of complexity to our recent Viaduct closure, but with fewer re-route choices, and shorter timeline
- Low Bridge restricted to people driving emergency vehicles, freight trucks, and public transit
- Seattle Police Department is supporting enforcement
- Path open to people walking and biking
- Access to Harbor Island for general public via east channel bridge



Traffic Mitigations — Detour Routes

- Traffic signal installed at Highland Park Way SW and SW Holden St
- Detour route signage to 1st Ave S Bridge improved
- Signals at the five-way intersection connected to citywide system for remote monitoring adjustment. Repave intersection weekend of 4/24-26.
- Stripe, sign, and smooth alternative routes
- Additional measures to be identified



Traffic Mitigations - Transit

- SDOT and Metro are working closely to keep buses moving in and out of West Seattle as quickly as possible
- Metro has temporarily reduced service in response to the public health crisis, but is likely to add back service when restrictions are lifted
- West Seattle buses are subject to bridge openings on the lower level bridge which can cause considerable delays
 - 700 buses each day currently; normally 900
- SDOT and Metro are working together on data sharing and traffic monitoring that will inform reliability enhancements

Bringing community together

- Work with West Seattle community and businesses to keep people informed, provide resources, and answer questions
- Share email updates with subscribers so they hear from SDOT about what's happening and how to get around
- Post blogs, new maps and graphics to help with commuting, and answers to important questions online
- Work closely with media, sharing news and answering questions for broader audiences
- Continue to build partnership with Department of Neighborhoods and Office of Economic Development to reach out to the broader community, freight, and maritime communities

Actions you can take right now

Visit West Seattle Bridge Website

- seattle.gov/transportation/westseattlebridge
- Click "Subscribe Now" button to get email updates about the bridge
- Browse reroute maps, FAQs, in-depth stories about the bridge and action plans, and more

Ask Questions

- 684-ROAD@seattle.gov
- 606-684-ROAD
- **Sign Up for AlertSeattle**
 - alert.seattle.gov
- **Start Planning for Post “Stay Home, Stay Healthy”**
 - The ability to travel to and from West Seattle will be greatly diminished during peak hours
- **Encourage Others to Follow Low Bridge Restrictions**

Answering Your Questions

- District 1, West Seattle & South Park: Lisa.Herbold@Seattle.Gov
- District 4, NE Seattle & Chair of Transportation Committee: Alex.Pedersen@Seattle.Gov
- SDOT, Director, Sam Zimbabwe
- SDOT, Director of Downtown Mobility, Heather Marx
- [**Or call 684-ROAD**](tel:2066847623)



Thank you for joining tonight's Virtual Town Hall and West Seattle Bridge Briefing

Hosted by Councilmember Lisa Herbold & Councilmember Alex Pedersen

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April 22, 2020



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